

AMSAT News Service Weekly Bulletins

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AMSAT NEWS SERVICE

ANS-106

In this edition:

- * SpaceX Falcon 9 Carries INSPIRE-Sat7 Into Orbit
- * TAPR/AMSAT Banquet to Be Held May 19
- * Updating the Satellite Status Page
- * SpaceX will try First Starship launch on April 17, 2023
- * IARU Simulations Predict Little 23cm RNSS Receiver Interference
- * GNU Radio Beginner Tutorials Updated
- * Changes to AMSAT-NA TLE Distribution for 14 April 2023
- * ARISS News
- * Upcoming Satellite Operations
- * Hamfests, Conventions, Maker Faires, and Other Events
- * Satellite Shorts From All Over

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on <http://www.amsat.org> publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to: [ans-editor \[at\] amsat \[dot\] org](mailto:ans-editor@amsat.org).

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ANS-106 AMSAT News Service Weekly Bulletins

To: All RADIO AMATEURS

From: Radio Amateur Satellite Corporation

712 H Street NE, Suite 1653

Washington, DC 20002

DATE 2023 Apr 16

SpaceX Falcon 9 Carries INSPIRE-Sat7 Into Orbit

The SpaceX Falcon 9 lifted off from Vandenberg Space Force Base in California on the Transporter-7 mission on April 15, 2023 at 2:48 a.m. Eastern, after several days of weather-related delays. The upper stage reached orbit a little more than eight minutes later, shortly after the first stage landed back at the launch site. It was the seventh dedicated rideshare mission.

The first telemetry from the satellite has been decoded and it has accepted its first telecommand sent by the ground control station.

The INSPIRE-Sat 7 satellite is a university project carried out by the University of Versailles Saint-Quentin en Yvelines (France) on behalf of LATMOS (UVSQ, Sorbonne University, Université Paris Saclay, CNRS).

This satellite is a demonstrator for experimenting new technologies with a strong involvement of students. This satellite allows the experimentation of miniaturized remote sensing sensors that could be used for multi-point observation of essential climate variables (ECV) and the ionosphere.

INSPIRE-Sat 7 carries :

- A 435.200 MHz telemetry channel with BPSK mode - GR3UH 9k6.
- An FM transponder with an uplink of 145.830 MHz and a downlink of 435.200 MHz. The FM transponder is expected to be active at least twice a month, depending on the satellite power budget.
- A SPINO card that will be activated for experimentation.

To receive the telemetry, a software has been developed: KissTool. It is available for Windows & Linux:

Linux: <https://site.amsat-f.org/download/118791/?tmstv=1680945385>

Windows: <https://site.amsat-f.org/download/118784/?tmstv=1680945385>

The user manual is available in French at:

<https://site.amsat-f.org/josast-kisstool/>

and English at:

<https://code.electrolab.fr/xtof/josast/-/blob/27-new-application-for-spino/ApplicationKissTool/src/site/markdown/UserManual.md>

[ANS thanks AMSAT-Francophone and Spacenews.com for the above information]

TAPR/AMSAT Banquet to Be Held May 19

14th Annual TAPR/AMSAT Banquet to Be Held May 19

The 14th annual TAPR/AMSAT Banquet will be held at the Kohler Presidential Banquet Center on Friday, May 19, 2023 at 18:30 EDT. This dinner is always a highlight of the TAPR (Tucson Amateur Packet Radio) and AMSAT (Radio Amateur Satellite Corp.) activities during the Dayton Hamvention. This year's banquet speaker will be announced in the coming weeks.

The Kohler Presidential Banquet Center is located at 4548 Presidential Way, Kettering, Ohio - about 20 minutes away from the Greene County Fairgrounds.

Tickets (\$60 each) may be purchased from the AMSAT store <https://tinyurl.com/ANS-106-Banquet>. The banquet ticket purchase deadline is Friday, May 12, 2023. Banquet tickets must be purchased in advance and will not be sold at the AMSAT booth. There will be no tickets to pick up at the AMSAT booth. Tickets purchased on-line will be maintained on a list with check-in at the door at the banquet center. Seating is limited to the tickets sold by the deadline.

[ANS thanks AMSAT for the above information]

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The 2023 AMSAT President's Club coins are here now!

To commemorate the 40th anniversary of its launch on June 16, 1983, this year's coin features an image of AMSAT-OSCAR 10.

Join the AMSAT President's Club today and help Keep Amateur Radio in Space!

<https://www.amsat.org/join-the-amsat-presidents-club/>

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Updating the Satellite Status Page

The AMSAT-BB has shown considerable interest and discussion on possible updates to the Satellite Status page on AMSAT.org. Matt Alberti, KM4EXS, AMSAT IT Team Manager provided the following feedback.

"The AMSAT IT Team does have it on our list of projects, to update the Satellite Status page. We do

want to include the feature that will allow for comments. There are other ideas like enabling the AMSAT Discord bot to check the "last heard" info for any given satellite. The initial plan was to try to open source the code, so that more people could contribute to make it better.

"That is still the plan. However, we identified some code that is pretty dated; and has some security issues. We have to resolve some of that before we can open source it.

"That all being said, if people are interested in contributing their time to this or other AMSAT IT projects, please e-mail us at [IT\(a\)amsat.org](mailto:IT(a)amsat.org). We would love to have a couple more people on the team that have development experience. We are a small team; and we all have family and full time job commitments. Our AMSAT volunteer time is largely limited to keeping the lights on, so to speak. We try to develop new capabilities or improve existing ones as best we can. But if any of you out there are passionate about this and have some coding experience, please reach out to us. Thanks!"

[ANS thanks Matt Alberti, KM4EXS, AMSAT IT Team Manager for the above information.]

SpaceX will try First Starship launch on April 17, 2023

It's official: SpaceX will try to launch the first orbital test mission of its huge Starship vehicle on Monday (April 17).

SpaceX has been targeting Monday for the Starship flight for the past week or so. That plan was tentative, however, as the company still needed to secure a launch license from the U.S. Federal Aviation Administration (FAA).

It's tentative no longer. At 5:50 p.m. EDT (2150 GMT) on Friday (April 14), the FAA announced the granting of the license, ending a review that lasted more than 500 days. Mere minutes later, SpaceX firmed up its launch plans.

"Targeting as soon as Monday, April 17 for the first flight test of a fully integrated Starship and Super Heavy rocket from Starbase in Texas," the company tweeted (opens in new tab) at 5:57 p.m. EDT (2157 GMT) on Friday.

The 150-minute launch window opens Monday at 8 a.m. EDT (1200 GMT; 7 a.m. local Texas time). You can watch the liftoff live here at [Space.com](https://www.space.com) when the time comes, courtesy of SpaceX.

Starship consists of a giant first-stage booster called Super Heavy and a 165-foot-tall (50 meters) upper-stage spacecraft known as Starship. Both of these vehicles are designed to be fully reusable, and both are powered by SpaceX's next-generation Raptor engine – 33 for Super Heavy and six for Starship.

As the above tweet notes, the upcoming test flight will lift off from Starbase, SpaceX's facility in South Texas. It will involve a Super Heavy prototype called Booster 7 and the Ship 24 upper-stage variant.

If all goes according to plan, Booster 7 will splash down in the Gulf of Mexico about 20 miles (32 kilometers) off the Texas coast around eight minutes after liftoff. Ship 24, meanwhile, will keep flying, conducting a partial lap of Earth before coming down in the Pacific Ocean near Hawaii.

When Booster 7 and Ship 24 lift off, Starship will become the most powerful rocket ever to fly. The vehicle will generate about 16.5 million pounds of thrust at liftoff, according to SpaceX – nearly twice as much as the current record holder, NASA's Space Launch System megarocket.

SpaceX has big plans for Starship. The company believes the giant vehicle, which stands 394 feet (120 meters) tall fully stacked, will make settlement of the moon and Mars economically feasible.

[ANS thanks Space.com for the above information.]

IARU Simulations Predict Little 23cm RNSS Receiver Interference

The IARU maintains the view that the likelihood of widespread and persistent interference from amateur

radio activities to RNSS (e.g. Galileo) receivers in the 23cm band is minimal. The WRC-23 preparatory studies carried out in the ITU-R study groups have only considered static one-to-one estimations using a minimum coupling loss approach. These studies do not consider the effect of an amateur transmitter on a population of RNSS receivers deployed around an amateur transmitting station.

Therefore IARU volunteers have carried out a "Monte Carlo" style study simulating scenarios assuming a fixed and mobile population of RNSS receivers deployed around an amateur station. A 100W amateur 'home station' and a 25W eirp 'repeater station' have been assumed.

The simulation results suggest that at most only around 1% of a population of fixed and mobile RNSS receivers randomly situated around a transmitting amateur station location would have a small chance of receiving a signal level above the RNSS protection threshold identified in the relevant ITU-R Recommendations. In most scenarios, the percentage of RNSS receivers impacted by interference above the threshold within the "simulation area" is far less than 1%. Even in the densest areas of amateur station activity and with the lowest clutter model the percentages remain less than 5%.

The study assumed that an amateur station is transmitting throughout the whole "Monte Carlo" trial period. However event data collected by the IARU shows that even in the busiest amateur communities the amount of time during which these sporadic transmissions are most likely to occur amounts to less than 2% of time over a one year period.

Therefore the IARU maintains its position that the potential for widespread and persistent interference between amateur radio transmissions and RNSS receivers is minimal.

You can read the complete report at <https://tinyurl.com/ANS-106-23CM>.

[ANS thanks the IARU for the above information.]

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Need new satellite antennas? Purchase Arrows, Alaskan Arrows,
and M2 LEO-Packs from the AMSAT Store. When you purchase through
AMSAT, a portion of the proceeds goes towards
Keeping Amateur Radio in Space.
<https://amsat.org/product-category/hardware/>

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GNU Radio Beginner Tutorials Updated

Have you had an inkling to learn some of the basics of software-design-radio design and implementation? If so, you might find the GNU Radio library of Beginners Tutorials most useful.

GNU Radio is a free & open-source software development toolkit that provides signal processing blocks to implement software radios. It can be used with readily-available low-cost external RF hardware to create software-defined radios, or without hardware in a simulation-like environment. It is widely used in research, industry, academia, government, and hobbyist environments to support both wireless communications research and real-world radio systems.

There are 19 beginners tutorials that have been recently updated. There are also another 20 intermediate/advanced tutorials as well as yet another 14 sections of developers resources. The tutorials are free and available on a newly designed landing page at <https://wiki.gnuradio.org/index.php/Tutorials>.

[ANS thanks GNURadio.org for the above information.]

Changes to AMSAT-NA TLE Distribution for 14 April 2023

Two Line Elements or TLEs, often referred to as Keplerian elements or keps in the amateur community, are the inputs to the SGP4 standard mathematical model of spacecraft orbits used by most amateur tracking programs. Weekly updates are completely adequate for most amateur satellites. TLE bulletin files are updated Thursday evenings around 2300 UTC, or more frequently if new high interest satellites

are launched. More information may be found at <https://www.amsat.org/keplerian-elements-resources/>

The following satellite has decayed from orbit and has been removed from this week's AMSAT-NA TLE distribution:

BY70-3 NORAD Cat ID 46839 (decayed from orbit on 8 April 2023 per Space-Track).

Additionally, Space-Track reports that the AMSAT-NA built H0-107 (HuskySat-1) NORAD Cat ID 45119 decayed from orbit on 12 April 2023. This satellite was removed from AMSAT-NA TLE distributions in December 2021 when End of Mission was declared.

[ANS thanks Joe Fitzgerald, KM1P, AMSAT-NA Assistant Orbital Elements Manager for the above information.]

ARISS NEWS

Amateurs and others around the world may listen in on contacts between amateurs operating in schools and allowing students to interact with astronauts and cosmonauts aboard the International Space Station. The downlink frequency on which to listen is 145.800 MHz worldwide.

+ Upcoming Operations

Mohammad Bin Rashid Space Centre, Dubai, UAE, direct via A68MBR.
The ISS callsign is presently scheduled to be OR4ISS.
The scheduled crewmember is Sultan Al Neyadi, KI5VTV.
The ARISS mentor is ON6TI.
Contact is go for Tuesday, April 18, 2023 at 10:43:28 UTC

West Michigan Aviation Academy, High School, Grand Rapids, MI, direct via W8ISS.
The ISS callsign is presently scheduled to be NA1SS.
The scheduled crewmember is Sultan Al Neyadi, KI5VTV.
The ARISS mentor is KD8C0J.
Contact is go for Thursday, April 20, 2023 at 18:20:54 UTC.

Rostov-on-Don, Russia, direct via TBD.
The ISS callsign is presently scheduled to be RS0ISS.
The scheduled crewmember is Andrey Fediaev.
The ARISS mentor is RV3DR.
Contact is go for Friday, April 21, 2023 at 08:10 UTC.

Montross Middle School, Montross, VA, Multi-point telebridge via K6DUE.
The ISS callsign is presently scheduled to be NA1SS.
The scheduled crewmember is Steve Bowen, KI5BKB.
The ARISS mentor is AA4KN.
Contact is go for Friday, April 21, 2023 at 17:34:31 UTC.

Agrupamento de Escolas João de Barros, Corroios, Portugal and Escola Secundária da Baixa da Banheira, Moita, Portugal, direct via CS5SS.
The ISS callsign is presently scheduled to be OR4ISS.
The ARISS mentor is IK0US0.
Contact is go for Saturday, April 22, 2023 at 12:06:44 UTC.

+ Completed Contacts

About Gagarin From Space, Ural State University of Railway Engineering, Yekaterinburg, Russia, direct via RK9C.
The ISS callsign was RS0ISS.

The crewmember was Sergey Prokopyev.
The ARISS mentor was RV3DR.

Contact was successful on Wednesday, April 12, 2023 at 09:02 UTC.

About Gagarin From Space, Admiral D.N. Senyavin Marine Technical Academy, St. Petersburg, Russia, direct via RY1AAG.

The ISS callsign was RSØISS.

The crewmember was Andrey Fediaev.

The ARISS mentor was RV3DR.

Contact was successful on Wednesday, April 12, 2023 at 10:34 UTC.

The latest information on the operation mode can be found at

<https://www.ariss.org/current-status-of-iss-stations.html>

The latest list of frequencies in use can be found at <https://www.ariss.org/contact-the-iss.html>

[ANS thanks Charlie Sufana, AJ9N, one of the ARISS operation team mentors for the above information.]

Upcoming Satellite Operations

None reported.

[ANS thanks Ian Parsons, K5ZM, AMSAT rover page manager, for the above information.]

Hamfests, Conventions, Maker Faires, and Other Events

+ CubeSat Developers Workshop

April 25-27, 2023

Cal Poly, San Luis Obispo

Performing Arts Center, 1 Grand Avenue, San Luis Obispo, CA 93405

<https://www.cubesatdw.org/>

+ Dayton Hamvention

May 19-21

Greene County Fair and Expo Center, 210 Fairground Road, Xenia 45385

<https://hamvention.org/>

+ TAPR/AMSAT Banquet

May 19, 2023

Kohler Presidential Banquet Center is located at 4548 Presidential Way, Kettering, Ohio

Reservations are required and available at the AMSAT Store

<https://www.amsat.org/product-category/amsat-at-hamvention/>.

+ AMSAT Symposium and Annual Meeting

October 20-21, 2013

Dallas, Texas

+ AMSAT Ambassadors provide presentations, demonstrate communicating through amateur satellites, and host information tables at club meetings, hamfests, conventions, maker faires, and other events.

AMSAT Ambassador Clint Bradford, K6LCS, says,

"Think a 75-minute presentation on "working the easy satellites" would be appropriate for your club or event? Let me know by emailing me at k6lcsclint (at) gmail (dot) com or calling me at 909-999-SATS (7287)!"

Clint has NEVER given the exact same show twice: EACH of the 150+ presentations so far has been customized/tailed to their audiences. An email message received after a recent presentation:

"I really enjoyed Clint's presentation last night. The fact that he had taken the time to research and know something about his audience and welcomed interaction made it very informative and enjoyable. This was a refreshing change from many canned YouTube presentations I've tried to watch, which were poorly

done, fuzzy video or muddy audio, or a badly prepared presenter stumbling his way through, with any valuable info lost along the way. Thanks for hooking this one up."

[ANS thanks Clint Bradford, K6LCS, and the AMSAT Events page for the above information]

Satellite Shorts From All Over

+ The 2023 CubeSat Developers Workshop has published its schedule for the April 25-27, 2023 event. It has also announced its Tuesday Keynote speaker as Maj. Gen. Douglas A. Schiess is the Commander, Combined Force Space Component Command, U.S. Space Command; and Vice Commander, Space Operations Command, U.S. Space Force, Vandenberg Space Force Base, California. The complete schedule is available at <https://www.cubesatdw.org/2023-schedule>. [ANS thanks CubeSat.org for the above information]

+ NASA announced today that it is once again delaying the launch of the Boeing Starliner CFT flight until 21 July 2023 – at the earliest. Starliner has been plagued by delays due to prolonged development, then a deeply flawed first (un-crewed) test flight, followed by repairs and redesigns, then a second un-crewed flight, followed by more issues that needed attending to before NASA would give a green light to fly a crew. According to NASA's Steve Stich the main delay in launching Starliner has to do with certification work. There is also a lot of arrival and departure activity at the ISS which also helped push the launch to the right. [ANS thanks spaceref.com for the above information]

+ One of the challenges of seeking to establish a permanent outpost on the Moon is how to provide communications to support those on the lunar surface. Space stations in LEO rely on Earth-based communications and navigations capabilities, but outposts and other assets on the Moon cannot rely on the same capabilities because of the vast distances and line-of-sight challenges to places like the far side of the Moon. The Parsec service responds to this challenge. Read more at <https://tinyurl.com/ANS-106-Parsec>. [ANS thanks Lockheed Martin for the above information]

Join AMSAT today at <https://launch.amsat.org/>

In addition to regular membership, AMSAT offers membership to:

- * Societies (a recognized group, clubs or organization).
- * Primary and secondary school students are eligible for membership at one-half the standard yearly rate.
- * Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status.
- * Memberships are available for annual and lifetime terms.

Contact info [at] amsat.org for additional membership information.

73 and remember to help Keep Amateur Radio in Space!

This week's ANS Editor, Frank Karnauskas, N1UW
n1uw [at] [amsat](https://amsat.org) [dot] org